

E1  
15. (Twice Amended) A rubber mixture comprising solution styrene/butadiene copolymers and an organosilane of formula (I):



D2  
wherein  $R^1$ ,  $R^2$  and  $R^3$  independently of one another are H,  $(C_1-C_4)$ alkyl,  $(C_1-C_4)$ alkoxy or halogen and the number of alkyl groups is  $\geq 1$ ;  $R^4$  is a linear or branched  $(C_1-C_{18})$  divalent hydrocarbon group; and  $Z = H$ , halogen, SCN, SH or  $S_x-R^4-SiR^1R^2R^3$ , where x is 2 to 10; and

wherein the organosilane is mixed with the rubber in unsupported form or supported on a carrier selected from the group consisting of silicic acids, natural silicates, synthetic silicates, aluminum oxide, and carbon black.

## II. REMARKS

### Preliminary Remarks:

Upon entry of this Amendment, claims 1-22 will be pending of which claims 1, 15, 21, and 22 are independent. Claims 1 and 15 are amended to claim a rubber mixture comprising a solution styrene/butadiene copolymers and an organosilane of formula  $R^1R^2R^3Si-R^4-Z$ . Support for the claim amendments can be found in the claims and specification as filed (see, for example, page 5, line 31 and page 8, line 3). The applicants believe that no new matter has been added as a result of these amendments.

This response supplements the preliminary amendment filed on March 4, 2003 with the request for continued examination and is filed to correct an inadvertent error. The term "solution styrene/butadiene copolymers" was incorrectly listed as "a solution of styrene/butadiene copolymers". Solution styrene/butadiene (SBR) copolymers refers to styrene/butadiene copolymers formed by solution polymerization, which is the method by which the SBR polymers in the present invention are formed.

The applicants believe that no fee is due with this response. For the convenience of the United States Patent and Trademark Office, the remarks with respect to the patentability of the pending claims are repeated herewith using the correct form of the term noted above.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached Appendix is captioned "Version with markings to show changes made".

Patentability Remarks:

*Rejections under 35 U.S.C. §102(b) –*

Claims 1-8 and 15-17 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Wolff *et al.* (U.S. Pat. No. 5,159,009). In light of the present amendments, this rejection is moot.

As amended, claims 1-20 are directed to solution styrene/butadiene copolymers and an organosilane of formula  $R^1R^2R^3Si-R^4-Z$ . The applicants note that the SBR example in Wolff *et al.* (Example VII in column 8) is an emulsion styrene/butadiene rubber. Therefore, the present claims are not anticipated by Wolff *et al.* and the applicants respectfully request removal of this rejection.

*Rejections under 35 U.S.C. §103(a) –*

Claims 9-14 and 18-20 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Wolff *et al.* in view of Takeichi *et al.* (U.S. Pat. No. 6,008,295). In light of the present amendments, this rejection is moot.

As noted above, claims 1-20 are directed to solution styrene/butadiene copolymers and an organosilane of formula  $R^1R^2R^3Si-R^4-Z$ . The styrene/butadiene rubber (SBR) example in Wolff *et al.* (Example VII in column 8) is an emulsion styrene/butadiene rubber. Attached herewith are pages 89-97 of Rubber Technology and Manufacture (Second Edition), Blow, *et al.* (Eds.), Butterworth Scientific, London (1982) which show that emulsion SBRs and solution SBRs are different compounds. Wolff *et al.* provides no motivation for one skilled in the art to use a solution SBR in place of the emulsion SBR disclosed. Therefore, there would be no motivation for one skilled in the art to mold solution SBRs containing organosilanes into products using the techniques of Takeichi *et al.* Therefore, the present claims are not unpatentable over Wolff *et al.* in view of Takeichi *et al.* and the applicants respectfully request removal of this rejection.

Inventor(s): LUGINSLAND  
Application No.: 09/538,941  
Attorney Docket No.: 021123-0258030

The applicants respectfully submit that this application is in condition for allowance and respectfully request a timely Notice to that effect. Should questions relating to patentability remain, the Examiner is invited to contact the undersigned to discuss the same.

Respectfully submitted,

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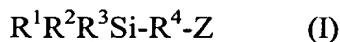
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**APPENDIX**

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

1. (Three Times Amended) A rubber mixture comprising [a] solution [of] styrene/butadiene copolymers and organosilanes of the general structure:



wherein  $R^1$ ,  $R^2$  and  $R^3$  independently of one another are H, (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)alkoxy or halogen and the number of alkyl groups is  $\geq 1$ ;  $R^4$  is a linear or branched (C<sub>1</sub>-C<sub>18</sub>) divalent hydrocarbon group; and Z = H, halogen, SCN, SH or S<sub>x</sub>-R<sup>4</sup>-SiR<sup>1</sup>R<sup>2</sup>R<sup>3</sup>, where x is 2 to 10.

15. (Twice Amended) A rubber mixture comprising [a] solution [of] styrene/butadiene copolymers and an organosilane of formula (I):



wherein  $R^1$ ,  $R^2$  and  $R^3$  independently of one another are H, (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)alkoxy or halogen and the number of alkyl groups is  $\geq 1$ ;  $R^4$  is a linear or branched (C<sub>1</sub>-C<sub>18</sub>) divalent hydrocarbon group; and Z = H, halogen, SCN, SH or S<sub>x</sub>-R<sup>4</sup>-SiR<sup>1</sup>R<sup>2</sup>R<sup>3</sup>, where x is 2 to 10; and

wherein the organosilane is mixed with the rubber in unsupported form or supported on a carrier selected from the group consisting of silicic acids, natural silicates, synthetic silicates, aluminum oxide, and carbon black.